

## ABSTRACT OF THE DISCLOSURE

The present invention relates to an in-vessel or down-hole optical imaging sensor or system for operating in structures which may contain media with different spectral transmission characteristics. The imaging sensor of the present invention selectively emits and/or detects two or more independently controllable wavelengths or wavebands. The imaging sensor comprises illuminating means for emitting radiation of a specified wavelength or waveband through a medium to a target, detector means for detecting the radiation deflected by said target and amplifier means for providing non-linear amplification of the detector means output. The sensor of the present invention may also comprise a sensor window and optical means for directing the radiation through an area of the sensor window in a first direction and optical means for receiving the radiation reflected from the target through the same area of the sensor window in a second direction. The optical means then transmit the reflected radiation to focusing optics which form an image of the target on the detector.